

REMARKS

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1-3, 5-10 and 12-16 are currently being prosecuted. The Examiner is respectfully requested to reconsider his rejections in view of the amendments and remarks as set forth below.

Entry of Amendment

It is respectfully requested that the present amendment be entered into the file, in view of the fact that the amendments to the claims automatically place the application in condition for allowance. Alternatively, if the Examiner does not agree that the application is in condition for allowance, it is respectfully requested that the present amendment be entered for the purposes of appeal. The present amendment reduces the number of claims on appeal and accordingly simplifies the issues at hand. Accordingly, entry of the amendment and full consideration thereof is considered to be proper.

Allowable Subject Matter

It is gratefully acknowledged that the Examiner considers claims 3 and 10 to contain allowable subject matter. It is further noted that claims 15 and 16 depend from claims 3 and 10 and, as such, are also considered to be allowable. The Examiner has listed these two claims in the Office Action Summary as being rejected, but they are not specifically included in any of the rejections in the Detailed Action. Accordingly, Applicants submit that these claims are allowable as well.

Rejection under 35 USC 103

Claims 1, 2, 4-9 and 11-13 stand rejected under 35 USC 103 as being unpatentable over Takeuchi et al., U.S. Patent 5,389,571, in view of Nishizawa et al., U.S. Patent 5,338,389. This rejection is respectfully traversed.

The Examiner relies on Takeuchi et al. to show a light-emitting device having a layered structure made by deposition techniques. The emitting layer contains a dopant and as a group III-V compound semiconductor. The device is also an ultraviolet emitter. The Examiner admits that Takeuchi et al. does not show the method to create the device. The Examiner relies on Nishizawa et al. to teach a use of pulse chemical vapor deposition where each element of the semiconductor is fed to the chamber separately and in a predetermined sequence. A gas is a source for III, V and dopant elements. The sources can be metal organic compounds. The Examiner feels that it would have been obvious to modify the Takeuchi et al. device to use the techniques of Nishizawa et al. to grow by pulse deposition to increase the control over the layer composition and thickness. Applicants submit that the presently amended claims are not obvious over this combination of references.

Applicants have amended the claims to include a number of limitations. Claims 1, 2, 5-9 and 12-14 have been amended to now refer to a deep ultraviolet light-emitting device. This limitation refers to a wavelength of ultraviolet light having 200-350nm. Ultraviolet light of this wavelength is not described in either of the references. Accordingly, these claims are considered to be allowable.

Furthermore, claims 1, 5, 7, 12 and 14 describe the composition of Al as being 20% or greater. Applicants submit that this limitation, in conjunction with the other limitations of the claims, are not seen in the references. Furthermore, claims 1 and 6 describe the crystal raw materials as Al and Ga and the other type of crystal raw material as N. Other claims also include other limitations. Applicants submit that the claims as presently amended are not seen in either of the references or their combination. Accordingly, Applicants submit that the claims are not obvious thereover. In particular, Takeuchi et al. does not utilize an alternate feeding method, which is at the heart of the present invention. Takeuchi et al. also does not have a light-emitting device for emitting deep ultraviolet. Likewise, Nishizawa et al. does not mention AlGaIn in an emitting device used for deep ultraviolet light. Accordingly, there is no showing of the concept of making AlGaIn for emitting deep ultraviolet light. For these reasons, Applicants submit that all of claim 1-3, 5-10 and 12-16 are patentable.

Conclusion

In view of the above amendments and remarks, it is believed that the claims clearly distinguish over the patent relied upon by the Examiner, either alone or in combination. In view of this, reconsideration of the rejections and allowance of all the claims are respectfully requested.

In the event that any outstanding matters remain in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

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Docket No.: 1794-0157P

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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